EP 0716870

96-278812/29 A26 D15 J01 (A97) **CHEM 94.12.12**
HUELS SILICONE GMBH *DE 4444175-A1
94.12.12 94DE-4444175 *(96.06.13)* B01D 19/04, C08G 77/08, 77/10, 77/12, 77/20, 77/38, 77/44, C08L 83/04

Non-gelling siloxane-based defoaming agent - produced simply by hydrosilylation of two siloxanes.

C96-088520
Addnl. Data: RAUTSCHEK H, SCHICKMANN H, OTTO R

A(6-AD, 6-AE, 10-E22A, 12-W12C) D(4-A1K) J(1-D2)

Siloxane-based defoaming agents are claimed contg. a branched, fluid polyorganosiloxane obtd. by reaction in presence of 2 hydrosilylation catalysts of:
(A) an organosiloxane with average < 2 statistically distributed functional gps.; and
(B) an organosiloxane with average > 2 statistically distributed functional gps., the functional gps. being either Si-bonded H or unsatd. hydrocarbon residues and each of (A) and (B) contg. only one type of functional gp.

Claimed prodn. is by mixing and hydrosilylation of a compsn. comprising (A) and (B) together with 0-95 wt.% polyorganosiloxane of 20-2×10^6 mm^2/s viscosity and opt. also amorphous hydrophilic and/or hydrophobic, pptd. and/or pyrogenic SiO_2.

ADVANTAGE

Widely-applicable, effective defoaming agents are obtd. by a simple method without the danger of gelling.

PREFERRED MATERIALS

(A) has 0.1-1.7 (esp. 0.3-1) functional gps. per mol. and (B) has > 3 (esp. 4-20), the stoichiometric functional gp. ratio (A):(B) is 0.8-1.2. (A) is obtd. by reaction of an organosiloxane having average ≥ 2 statistically distributed functional gps. with an organosiloxane having no functional gps., esp. by reaction of di-Me-vinylsiloxy-terminated and poly-di-Me-siloxane (PDMS) with tri-Me-siloxy-terminated PDMS in presence of an equilibration- promoting catalyst, which can be an acid or base. The hydrosilylation catalyst is Pt (cpd).

PREFERRED PROCESS

The SiO_2 is added to (A) or (B) or to their starting materials, esp. to (A) prior to mixing with the other components. The amt. of SiO_2 is 0.5-15 (esp. > 1) wt.% and hydrophobisation can be effected in situ in the siloxane at 100-250 °C for 10 mins.-24 h.

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EXAMPLE

A defoaming agent which could be used in amt. 5 g together with 95 g Na_2SO_4 to give 84 % defoaming in a washing powder (Si content 0.2 % from the agent) comprised:
(i) 200 pts. non-cyclic siloxane contg. on average 1 unsatd. gp./mol and prepd. by reacting 600 pts. di-Me vinylsiloxy-terminated PDMS (viscosity 10000 mm^2/s) and 200 pts. tri-Me-siloxy-terminated PDMS (350 mm^2/s) in presence of 200 ppm phosphorus nitrile chloride for 4 h at room temp. and then neutralising with 50 ppm triisooctylamine;
(ii) 40 pts. prod. with average 10 Si-bonded H atoms obtd. by reacting 990 pts. tri-Me-siloxy-terminated PDMS (20,000 mm 2/s) and 10 pts. $Me_3SiO[SiMeH.O]_{50}SiMe_3$ in presence of 20 ppm phosphorus nitrile chloride for 6 h at room temp. and then neutralising with 50 ppm triisooctylamine; and
(iii) 600 pts. dispersion of 272 pts. hydrophilic pyrogenic SiO_2 (BET 200 g/m^2) and 1728 pts. PDMS (200 mm^2/s).

Mol ratio SiH : Si vinyl = 0.8.

(TDP)
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